REMARKS

Claims 1-14 were pending and considered. Claims 1-14 have been rejected. In response, claims 1 and 10 have been amended. Claims 1-14 remain pending. Reconsideration and allowance are respectfully requested.

Response To Claim Objections

Claims 1-14 have been objected to, with the Examiner stating that first and second printing steps are referred to in various claims; however, independent claims 1 and 10 had no explicit mention of the first and second steps. In response, claims 1 and 10 have been amended to explicitly mention first and second printing steps, as well as first and second advancing steps. Thus, it is respectfully submitted that subsequent references to first or second printing steps and first or second advancing steps are clear with respect to the steps being referred to, and the objection to claims 1-14 should be removed.

Response To Claim Rejections – 35USC § 112

Claim 8 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that the recitations for and definitions of "p" in claim 8 are unclear, and questions if "p" is meant to represent the number of passes in the first printing step, the second printing step or both.

It is respectfully submitted that the definitions are in fact clear. Claim 8 recites the first printing step to be multiple pass printing, with the multiple being an integer "p". The claim further defines "n" to be "the number of passes at the bottom of the page". As defined in claim 8, "n" and "p" are equal. Thus, claim 8 recites "n = number of passes at bottom of page = p". The term "p" is clearly defined to reference the integer number of multiple passes used in the first printing step, and "n" is used to define the number of passes at the bottom of the page. However, in the definition it is further defined that "n" and "p" are equal. It is respectfully submitted that claim 8 is definite, and that the rejection under 35 U.S.C. §112 should be removed.

With respect to claim 8, it is noted that no rejection on prior art has been made in the office action. Therefore, upon removal of the rejection under 35 U.S.C §112, claim 8 should be in condition for allowance, which applicants hereby respectfully request.

Response To Claim Rejections – 35USC § 102

Claims 1-7 and 9-14 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,352,326 (Maeda). In response, claims 1 and 10 have been amended. It is respectfully submitted that claims 1 and 10 recite an invention neither anticipated by nor obvious from the prior art. Accordingly, applicants submit that claims 1 and 10 together with claims 2-9 and 11-14 depending therefrom are now in condition for allowance, which is hereby respectfully requested.

Maeda discloses a printing apparatus and printing method that include thinning and rotating the print data as the end of the printable area is reached. In a first embodiment described in the paragraph spanning columns 15 and 16 of the Maeda patent, at the m-th and subsequent scans the remaining feedable distance Y is smaller than the logical printing medium feed distance X. As a result, the print medium is not fed, and the printing operation is performed by separately incrementing the rotation amount R2 of the second shift register (printing correction) and the rotation amount R1 of the first shift register (thinning). In a second embodiment of Maeda for two-pass printing, as described in column 17 beginning at line 35, the feed distance is adjusted as the rear end of the printable area of the printing medium is reached. When the print head reaches a position where advancement of the medium by the amount of the logical print medium feed pitch X would exceed the remaining feedable distance Y, the feed distance is adjusted to the largest multiple of the print block height H within the remaining feedable distance Y. The rotation amounts in the shift registers are appropriately corrected. When the remaining feedable distance Y is smaller than the logical print medium feed pitch X and is also smaller than the block

height H the print medium feed operation is not carried out. Thus, in the process of Maeda as the end of the printable area is reached the sheet is advanced by an amount equal to a maximum whole multiple of a print block height. When the remaining printable distance is less than a whole print block height, advancement stops.

Applying this process to the example of the present application, with a fifty PEL high group of raster lines in a print block, as many as forty-nine raster lines at the bottom of a print area could be subjected to poor quality printing in that advancement of the media would not occur when the remaining printable distance is less than a whole print block height.

In contrast to the teaching of Maeda, in the present invention as the end of the printable area is approached, the sheet is advanced only by a fixed minimum reliable move amount. As the term implies, this distance is the minimum distance that the sheet can be advanced taking into consideration inaccuracies of the drive mechanisms. Thus, as stated in the present application, "More particularly, because of possible errors associated with the rotation of the feed rollers advancing print medium 12, there is a minimum reliable move amount which print medium 12 must be moved in an advanced direction 18." (Page 5, lines 10-12)

This difference between the present invention and Maeda is clearly recited in amended claims 1 and 10, which recite in part;

> **"advancing the print medium in said advance direction a fixed minimum reliable move amount ... less than said predetermined amount and sufficient to overcome advancement errors associated with operation of equipment for said advancing steps;"** (Emphasis added.)

Applicants submit that the invention recited in amended claims 1 and 10 is neither taught nor suggested by Maeda and includes advantages over the prior art.

Whereas Maeda attempts to maximize the advance distance as the end of the printable area is reached, the present invention does just the opposite. The sheet is advanced only by a fixed distance that the sheet can be advanced accurately. Thus, four pass and other multi pass printing is continued much farther along the sheet in the present invention.

Maeda does not teach or suggest a print method in which, near the end of the printable area, the print medium is advanced a lesser fixed distance or by a fixed minimum reliable move amount, as recited in claims 1 and 10. Instead, Maeda teaches advancing the sheet a variable amount that must be at least one full print block in height. By using the method of the present invention, the area at the bottom of the print field in which print degradation can occur is minimized, improved end of page printing is provided and better quality printing results. For these reasons, it is respectfully submitted that amended claim 1 along with claims 2-7 and 9 dependent therefrom, and amended claim 10 along with claims 11-14 dependent therefrom are in condition for allowance, which is respectfully requested.

Additionally, however, it is respectfully submitted that many of the dependent claims are also separately allowable, reciting additional features of the invention that are not taught or suggested by the prior art.

Claims 3 and 12 recite a method for determining the end of the printable area on the print medium, one factor of which is "Rm", defined to be "a number of raster lines corresponding to said minimum reliable move amount." It is respectfully submitted that in addition to failing to teach a method utilizing advancement by a minimum reliable amount, the cited prior art further fails to teach or suggest the recited steps for calculating the end of a printable area which takes into consideration the minimum reliable move amount.

Claim 4 and 13 depend from claims 3 and 12, respectively, and include all of the limitations thereof referred to above. Claims 4 and 13 further recite adjusting the predetermined amount in a manner to attain alignment of the print head with the end of the printable area. The adjustment takes into consideration as one factor in the calculation the value of "Rm", the number of raster lines corresponding to the minimum reliable move amount. It is respectfully submitted that the cited prior art does not teach or suggest such an adjustment that includes the minimum reliable move amount as a factor in determining the amount of the adjustment.

For these reasons, applicants submit that claims 3, 4, 12 and 13 separately recite aspects of the invention not taught by the prior art and should be allowed.

Conclusion

For the foregoing reasons, Applicants submit that the pending claims are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Moreover, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all objections and rejections, and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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July 7, 2003
Date